FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

November 24 to 30, 2013 (Week 48)

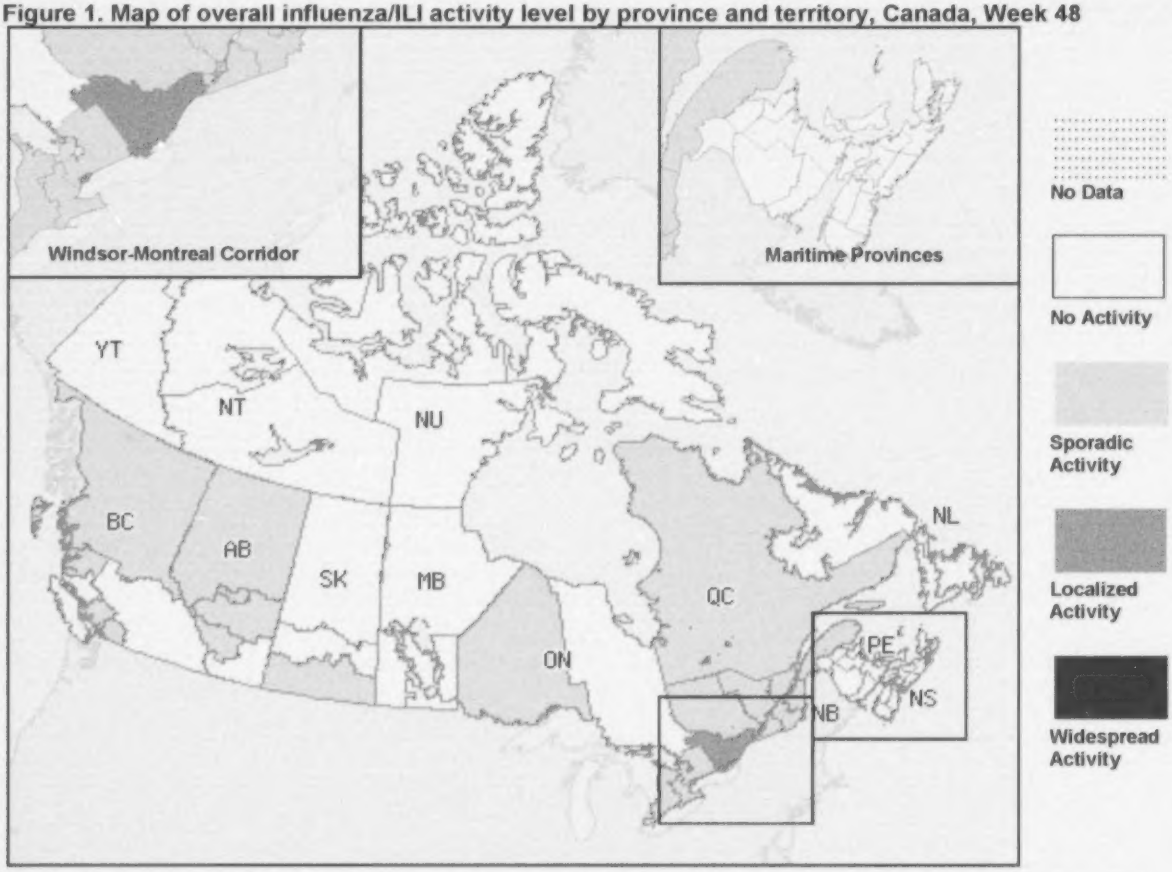
Overall Summary

- Influenza activity in Canada continued to increase in week 48.
- Influenza A remained the predominant influenza virus type, with 77% of subtyped influenza A specimens to date identified as A(H1N1)pdm09.
- Two regions reported localized influenza/ILI activity and 18 reported sporadic activity, and the ILI consultation rate continued to increase.
- The number of both paediatric and adult hospitalizations with influenza increased in week 48.
- RSV detections increased sharply in week 48, although rhinovirus remained the predominant virus detected.

Influenza/ILI Activity (geographic spread)

In week 48, two regions in Ontario reported localized activity and 18 regions (in BC(3), AB(4), SK(1), ON(4), and QC(6)) reported sporadic activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 48

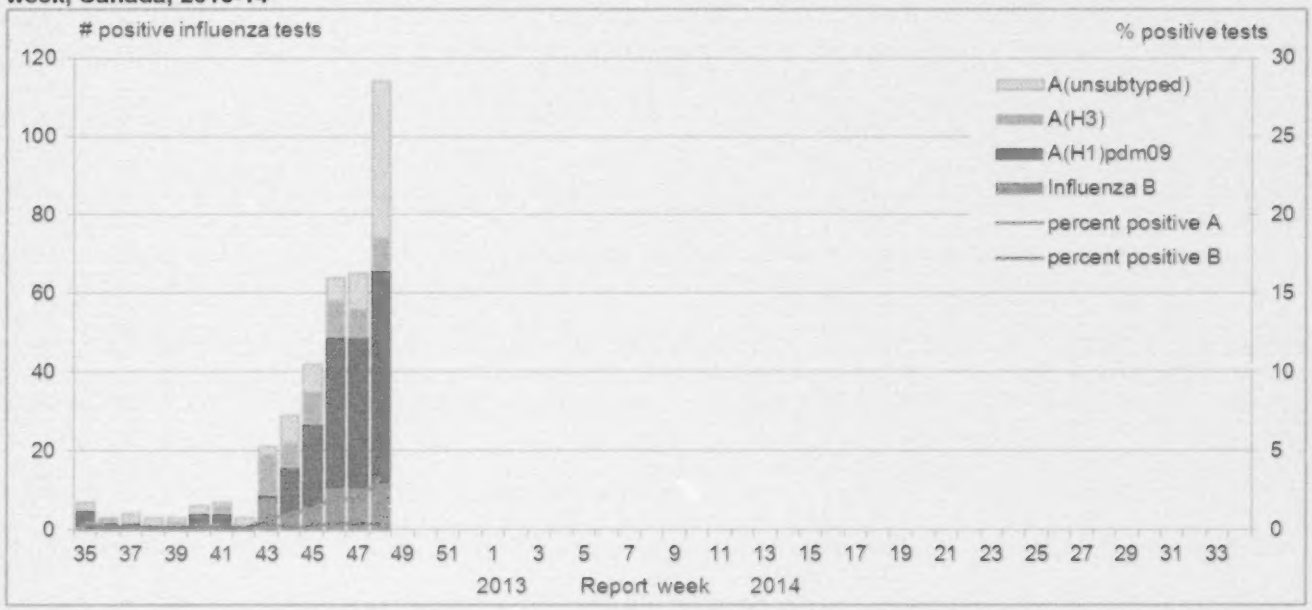


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests increased sharply, from 65 in week 47 to 114 in week 48, bringing the percentage of positive influenza tests to 3.7% (Figure 2). Cumulative influenza virus detections by type/subtype to date have been predominantly influenza A (84%) with more A(H1N1)pdm09 identified compared to A(H3) among those subtyped (Table 1). Detailed information on age and type/subtype has been received for 382 cases to date this season. The proportion of positive laboratory specimens by age-group is consistent with the expected pattern for seasonal influenza: 47% of laboratory detections were ≥45 years of age, and 20% were under 5 years of age.

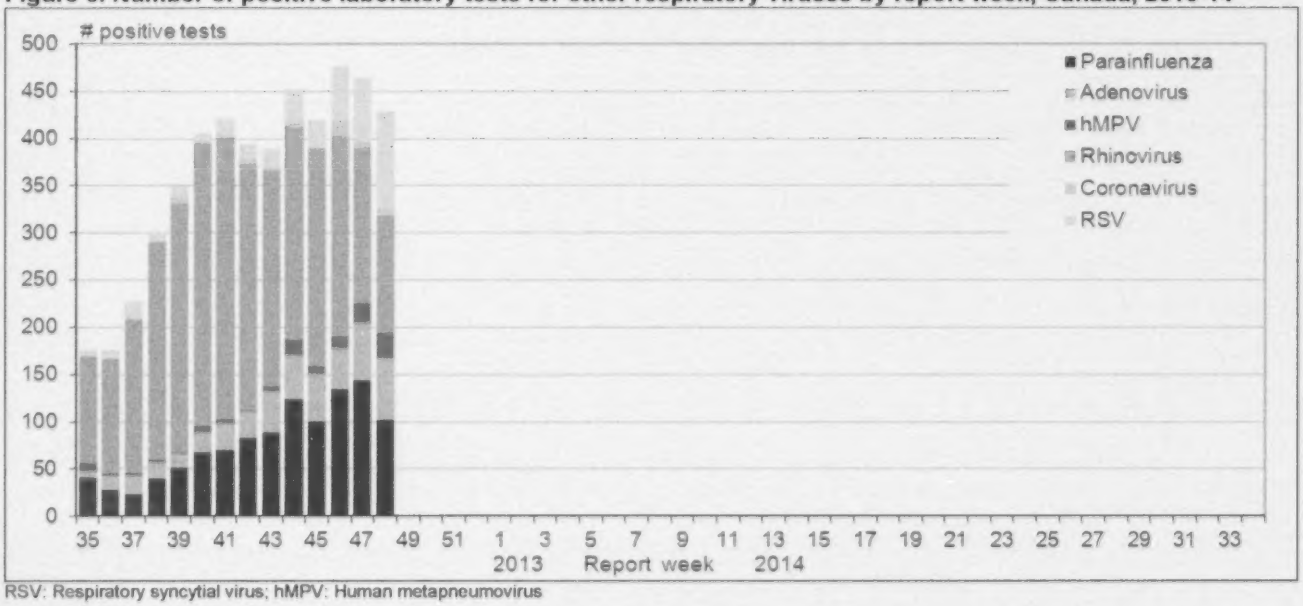
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



In week 48, the number of positive tests for RSV increased sharply; detections of adenovirus and human metapneumovirus continued a slow increase; and detections of parainfluenza declined. Positive tests for rhinovirus continued to decline. Rhinovirus remained the predominant virus detected in week 48 (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (November 24 to November 30, 2013)					Cumulative (August 25, 2013 to November 30, 2013)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	8	7	0	1	0	23	15	3	5	4
AB	35	25	0	10	0	101	82	9	10	15
SK	4	4	0	0	0	14	10	0	4	0
MB	1	1	0	0	2	8	8	0	0	4
ON	37	17	8	12	0	121	59	39	23	12
QC	15	0	0	15	10	39	0	0	39	25
NB	0	0	0	0	0	2	1	1	0	0
NS	0	0	0	0	0	0	0	0	0	0
PE	0	0	0	0	0	0	0	0	0	0
NL	2	0	0	2	0	3	1	0	2	0
Canada	**102**	**54**	**8**	**40**	**12**	**311**	**176**	**52**	**83**	**60**
Percentage[2]	89.5%	52.9%	7.8%	39.2%	10.5%	83.8%	56.6%	16.7%	26.7%	16.2%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

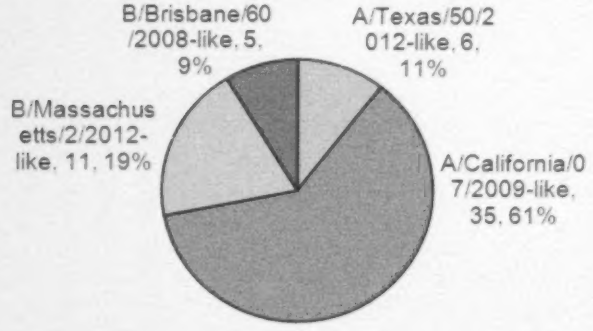
Age groups (years)	Weekly (November 24 to November 30, 2013)					Cumulative (August 25, 2013 to November 30, 2013)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	15	6	2	7	1	59	26	6	27	17	76	19.8%
5-19	6	4	0	2	0	32	22	1	9	16	48	12.5%
20-44	23	12	0	11	0	75	40	4	31	4	79	20.6%
45-64	13	4	0	9	0	83	40	15	28	14	97	25.3%
65+	11	3	0	8	3	53	16	15	22	29	82	21.4%
Unknown	1	1	0	0	0	2	2	0	0	0	2	0.5%
Total	69	30	2	37	4	304	146	41	117	80	384	100.0%
Percentage[2]	94.5%	43.5%	2.9%	53.6%	5.5%	79.2%	48.0%	13.5%	38.5%	20.8%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 57 influenza viruses [6 A(H3N2), 35 A(H1N1)pdm09 and 16 influenza B]. Fifty-two (91.2%) viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine; five influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 57



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009 (H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 47 influenza viruses for resistance to oseltamivir and 45 for resistance to zanamivir, and all were sensitive. Twenty-seven influenza A viruses were tested for amantadine resistance, and all were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

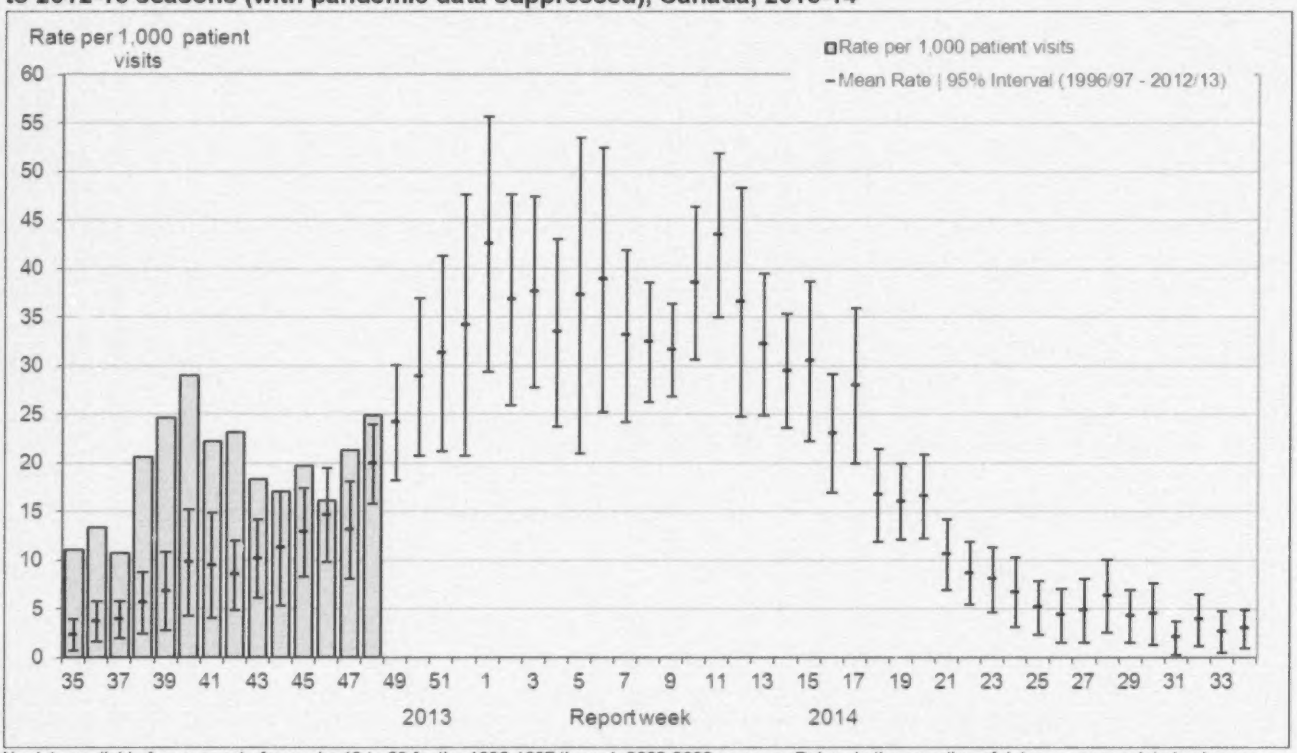
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	6	0	6	0	7	7 (100%)
A (H1N1)	27	0	25	0	20	20 (100%)
B	14	0	14	0	NA[1]	NA[1]
TOTAL	47	0	45	0	27	27 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 21.3/1,000 in week 47 to 24.9/1,000 in week 48, following an upward trend in keeping with other surveillance indicators (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

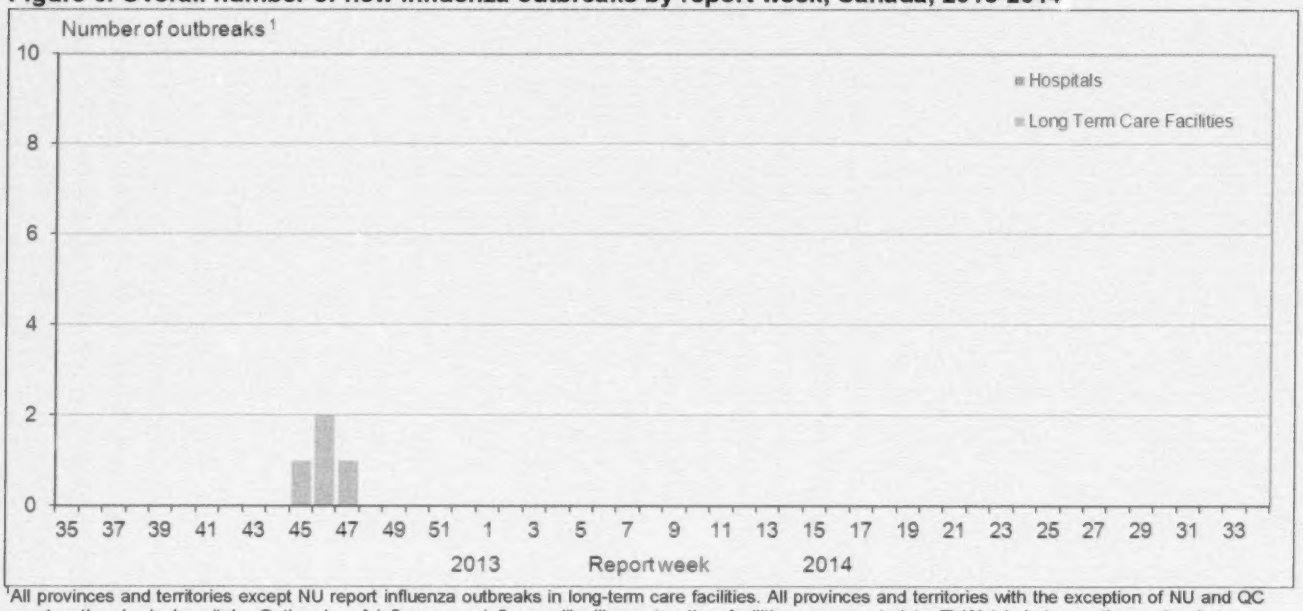


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

No new influenza outbreaks were reported in week 48 (Figure 6).

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

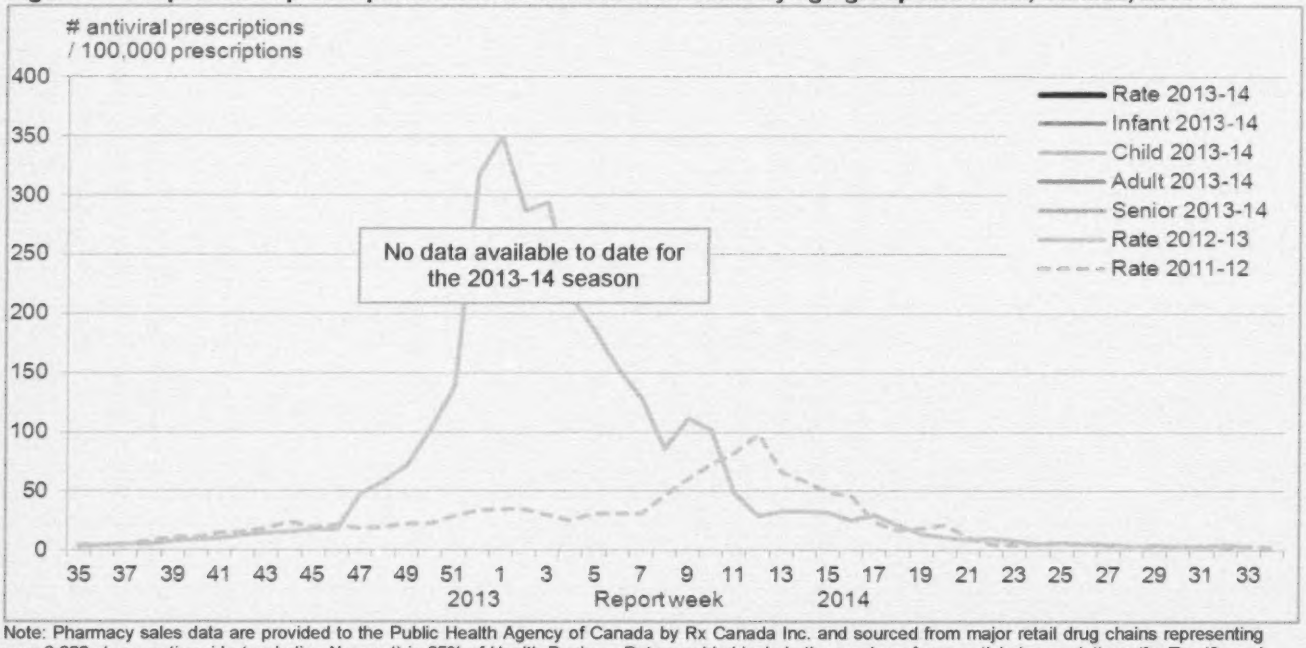


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

Pharmacy surveillance for sales of influenza antivirals has not yet begun for the 2013-14 influenza season (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 48, nine new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network: all cases of influenza A (four A(H1N1)pdm09 and five A(unsubtyped)). Four cases were children under 6 months of age, two cases were 6-23 months of age, and three cases were 2-9 years of age. (Figure 8a).

To date this season, a total of 28 influenza-associated paediatric hospitalizations have been reported by the IMPACT network (Table 4). Two ICU admissions were reported, both in children 2-4 years of age, one with influenza A(H1N1)pdm09 and one with influenza B. No deaths have been reported (Figure 9a).

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 48, eight new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network: two cases 20-44 years of age, two cases 45-64 years of age and four ≥65 years of age. Influenza A was identified in all cases: four A(H1N1)pdm09, one A(H3N2) and three A(unsubtyped). No ICU admissions or deaths were reported in week 48 (Figure 8b).

To date this season, 24 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, all with influenza A. The majority (75%) have been adults over 45 years of age (Table 5). ICU admission was required for one hospitalization and no deaths have been reported (Figure 9b).

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

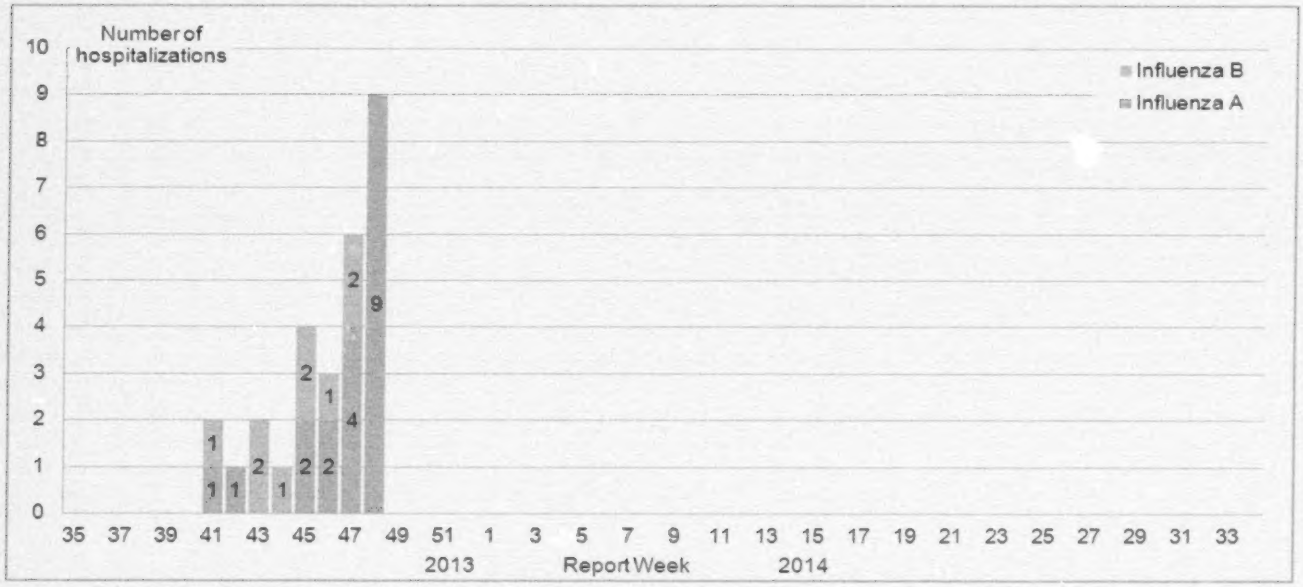
Age groups	Cumulative (Aug. 25, 2013 to Nov. 30, 2013)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	5	1	0	4	1	6 (21%)
6-23m	2	1	0	1	1	3 (11%)
2-4y	5	2	0	3	5	10 (36%)
5-9y	5	3	0	2	1	6 (21%)
10-16y	2	1	0	1	1	3 (11%)
Total	19	8	0	11	9	28
% [1]	67.9%	42.1%	0.0%	57.9%	32.1%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

Age groups (years)	Cumulative (Aug. 25, 2013 to Nov. 30, 2013)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	0	0	0	0	0	0
20-44	6	3	0	3	0	6 (25%)
45-64	8	1	2	5	0	8 (33%)
65+	10	0	1	8	0	10 (42%)
Total	24	5	3	16	0	24
% [1]	100%	21%	13%	67%	0%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)

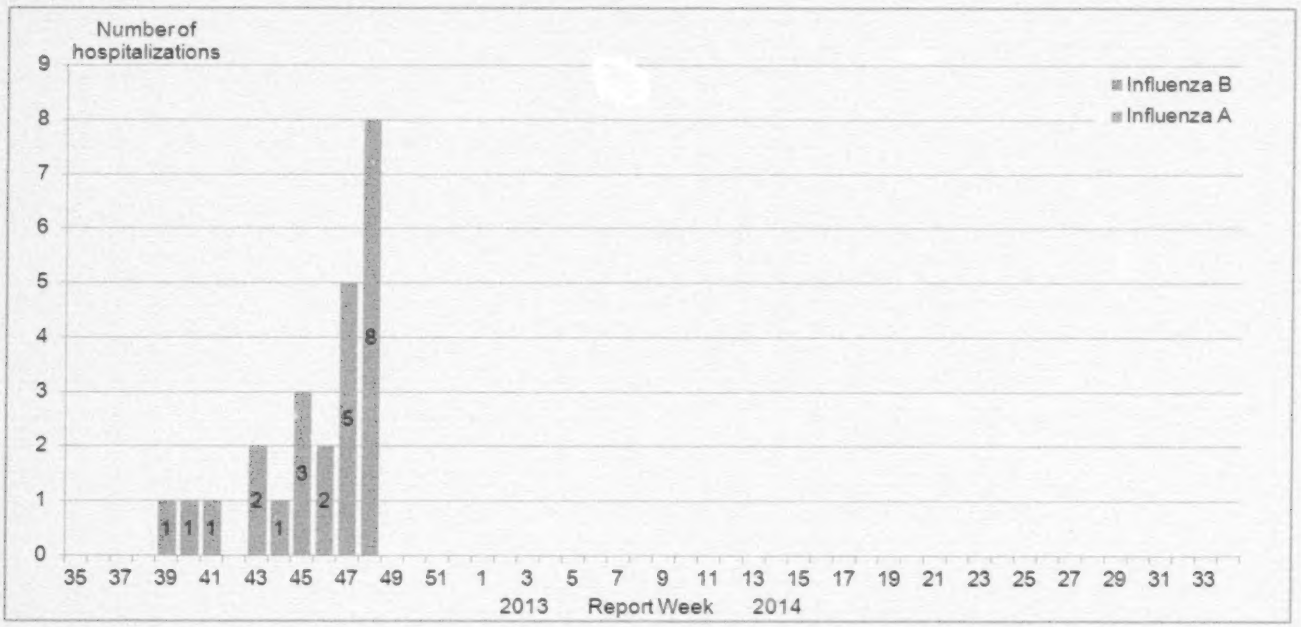
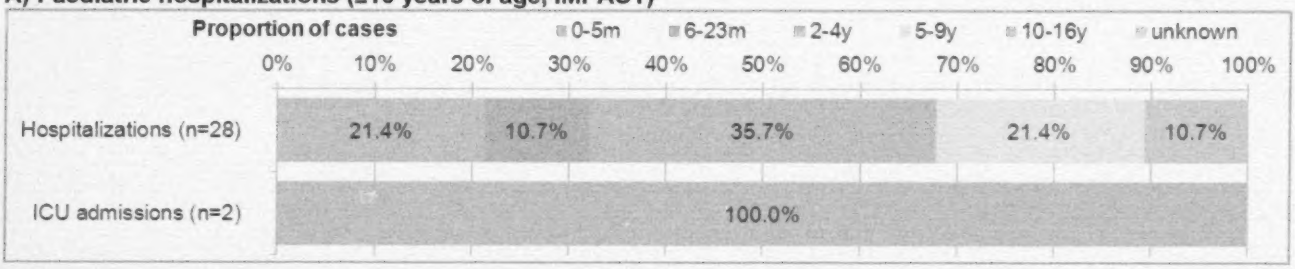
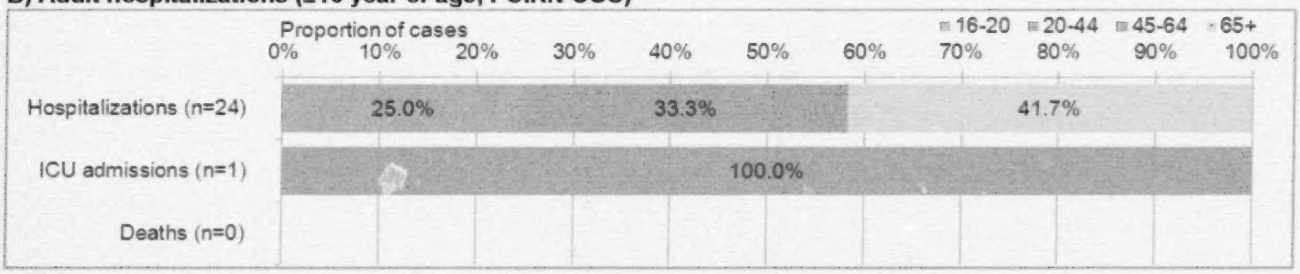


Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 48, 11 new laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The cases were as follows: two children less than 6 months of age, one child 6-23 months, two children 5-14 years, three adults 20-44 years, two adults 45-64 years and one adult ≥65 years of age. All cases were influenza A, of which six were A(H1N1)pdm09 and five A(unsubtyped). No ICU admissions or deaths were reported.

To date this season, 68 influenza-associated hospitalizations have been reported, of which 61 (90%) had influenza A (Table 6). More than half of cases (52%) were ≥45 years of age, and 24% were under 5 years of age. A greater proportion of cases under 20 years of age had influenza B (22%) compared to those 20 years of age or older (4%). Five ICU admissions have been reported this season, four in adults 45-64 years of age and one in a child 2-4 years of age, all with A(H1N1)pdm09. One death has been reported in an adult 45-64 years of age with A(H1N1)pdm09. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, NS, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (Aug. 25, 2013 to Nov. 30, 2013)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	12	6	1	5	4	16 (24%)
5-14	4	1	0	3	1	5 (7%)
15-19	2	1	0	1	0	2 (3%)
20-44	10	8	0	2	0	10 (15%)
45-64	19	10	7	2	1	20 (29%)
65+	14	7	4	3	1	15 (22%)
Total	61	33	12	16	7	68
Percentage[1]	89.7%	54.1%	19.7%	26.2%	10.3%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): One new laboratory-confirmed case of human infection with influenza A(H7N9) has been reported by the World Health Organization in Hong Kong Special Administrative Region, China. The case is a 36 year old female who was reported to have had exposure to live poultry while in Shenzhen, Guangdong province, China. As of 6 December 2013, the WHO has been informed of 141 laboratory-confirmed human cases with avian influenza A(H7N9), including 47 deaths.

PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Human Swine Influenza

Influenza A(H3N2)v: No new cases of human infection with influenza A(H3N2)v were reported in week 48. To date in 2013, a total of 19 A(H3N2)v cases including one hospitalization have been reported.

Centers for Disease Control and Prevention Influenza A(H3N2) Variant Virus

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Since the FluWatch report for week 47, the WHO has reported three additional laboratory confirmed cases of MERS-CoV, with one death, in the United Arab Emirates (UAE), and two deaths of previously confirmed cases in Qatar.

The three cases in the UAE belong to a family including a 32 year-old female who gave birth to a newborn while hospitalized and subsequently died, a 38 year-old male who is in critical condition, and an 8 year-old male with mild respiratory symptoms. The two adults had no travel history, contact with a known confirmed case and no history of contact with animals.

Globally, from September 2012 to December 6, 2013, WHO has been informed of a total of 163 laboratory-confirmed cases of infection with MERS-CoV, including 71 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region†**

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region†**

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.